

AMERICA'S HELIUM SUPPLY: OPTIONS FOR PRODUCING MORE HELIUM FROM FEDERAL LANDS

OVERSIGHT HEARING

BEFORE THE

SUBCOMMITTEE ON ENERGY AND
MINERAL RESOURCES

OF THE

COMMITTEE ON NATURAL RESOURCES
U.S. HOUSE OF REPRESENTATIVES

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**OVERSIGHT HEARING ON “AMERICA’S
HELIUM SUPPLY: OPTIONS FOR PRO-
DUCING MORE HELIUM FROM FEDERAL
LANDS.”**

**Thursday, July 11, 2013
U.S. House of Representatives
Subcommittee on Energy and Mineral Resources
Committee on Natural Resources
Washington, D.C.**

The Subcommittee met, pursuant to notice, at 9:51 a.m., in Room 1334, Longworth House Office Building, Hon. Doug Lamborn [Chairman of the Subcommittee] presiding.

Present: Representatives Hastings, Flores, Lowenthal, and Cartwright.

Mr. LAMBORN. The Committee will come to order. Thank you all for being patient. We had a vote over on the Floor just now we had to take care of, and now we are back in business.

And Representative Lowenthal on the minority side will be here momentarily. His opening statement will be given by him at such time that he gets here and the first opportunity after he arrives. But he will be here shortly.

Also anytime that a Full Committee Chairman or Ranking Member are present, we give them the courtesy and look forward to any statements they might make. And so Representative Hastings shortly will have a statement as well.

The Chairman notes the presence of a quorum, which under Committee Rule 3(e) is two Members. The Subcommittee on Energy and Mineral Resources is meeting today to hear testimony on an oversight hearing on “America’s Helium Supply: Options for Producing More Helium from Federal Lands.”

Under Committee Rule 4(f), opening statements are limited to the Chairman and Ranking Member. However, I ask unanimous consent to include any other Members’ opening statements in the hearing record if submitted to the clerk by close of business today.

[No response.]

Hearing no objection, so ordered.

I now recognize myself for 5 minutes.

STATEMENT OF THE HON. DOUG LAMBORN, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF COLORADO

Mr. LAMBORN. I’d like to thank everyone here today for attending this hearing. The Subcommittee is meeting to discuss the existing U.S. demand for helium, the future of domestic helium production after the closure of the Federal Helium Reserve, and existing and potential production of helium from Federal lands. Helium is essential to many industries that are vital to the United States. It is an

essential element in the defense, welding, medical, semiconductor, and nuclear industries.

Over the past year, this Subcommittee has focused on ensuring that U.S. industries have access to a reliable supply of helium by providing for the continued operation of the Federal Helium Reserve past its upcoming closure in October.

In May, the House overwhelmingly passed the bipartisan Responsible Helium Administration and Stewardship Act, which would complete the privatization of the Federal reserve by injecting free market reforms into the current program to ensure taxpayers receive a fair value for this Federal resource. Also, it would provide for stability in the helium market and would protect American jobs and innovation.

While the continued operation of the helium reserve in order to prevent an immediate global helium shortage remains a priority for this Committee, we must recognize that the closing of the Federal Helium Reserve is imminent. With the reserve currently providing nearly half the domestic helium supply and 30 percent of the global supply of helium, the closure of the reserve would leave a major gap in the domestic and global helium supply that must be filled by private industry.

Unfortunately, domestically the private helium industry has been slow to develop as the U.S. reserve has dumped cheap helium onto the market. This has delayed new significant sources of domestic helium from coming online.

Meanwhile, countries like Algeria, Qatar, and Russia have growing helium industries. This could leave Americans increasingly dependent on foreign sources of helium to provide a critical element of their business, when they could, instead, be getting helium produced by U.S. workers right here at home.

Fortunately, recognizing the need and opportunity, natural gas producers are increasingly beginning to extract helium from natural gas. Further, helium producers are looking at Federal lands as a source of crude helium to fill the void that will be left when the helium in the Federal reserve has been depleted and the reserve closes.

And recently, the Nation's first exploratory well devoted solely to the extraction of helium was approved by secretarial waiver. With the impending closure of the reserve, we must look toward securing the Nation's future helium supply. The United States has the potential for abundant crude helium production, and we must harness that potential to diversify our Nation's helium supply and to ensure regulatory certainty for companies seeking to tap into this emerging industry.

Once again, I'd like to thank our witnesses for being here to testify before our Subcommittee, and I look forward to hearing your testimony.

I'd now like to recognize Mr. Lowenthal.

[The prepared statement of Mr. Lamborn follows:]

**Statement of The Honorable Doug Lamborn, Chairman,
Subcommittee on Energy and Mineral Resources**

I'd like to thank everyone for attending today's hearing. The Subcommittee is meeting to discuss the existing U.S. demand for helium, the future of domestic he-

lium production after the closure of the Federal Helium Reserve, and existing and potential production of helium from federal lands.

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Unfortunately, domestically the private helium industry has been slow to develop as the US Reserve has dumped cheap helium onto the market. This has delayed new significant sources of domestic helium from coming online, meanwhile countries like Algeria, Qatar, and Russia have growing helium industries. This could leave Americans increasingly dependent on foreign sources of helium to provide a critical element of their business when they could instead be getting helium produced by US workers right here at home.

Fortunately, recognizing the need and opportunity, natural gas producers are increasingly beginning to extract helium from natural gas. Further, helium producers are looking at federal lands as a source of crude helium to fill the void that will be left when the helium in the Federal Reserve has been depleted and the Reserve closes. And recently, the nation's first exploratory well devoted solely to the extraction of helium was approved by a Secretarial waiver.

With the impending closure of the Reserve, we must look towards securing this nation's future helium supply. The United States has the potential for abundant crude helium production and we must harness that potential to diversify our nation's helium supply and ensure regulatory certainty for companies seeking to tap into this emerging industry.

I'd like to thank our witnesses for being here to testify before our Subcommittee and I look forward to hearing your testimony.

STATEMENT OF THE HON. ALAN S. LOWENTHAL, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF CALIFORNIA

Dr. LOWENTHAL. Thank you, Mr. Chair.

As this Committee has thoroughly reviewed, helium is a unique and non-renewable resource critical to a variety of high-tech applications. The most pressing issue related to the helium market is the quickly approaching end of the fiscal year, which will bring closure to the Federal Helium Reserve unless Congress and the President authorize the continued operation of the Federal reserve.

Currently, nearly half of all U.S. helium supplies and a third of the global helium supplies come from this reserve. Cutting off this supply would have a disastrous consequence for hospitals, for manufacturers, and for researchers around the world.

That's why the House passage of H.R. 527, the Responsible Helium Administration and Stewardship Act this past April was so critical. That bipartisan bill authored by Chairman Hastings, Ranking Member Markey, Energy and Minerals Ranking Member Holt, and Representative Flores passed the House in April in an overwhelming bipartisan vote of 394 to 1.

While personally I believe that some of the revenue from the sale of the publicly owned helium from the Federal Helium Reserve should be used for the benefit of all Americans through funding of the stateside Land and Water Conservation Fund, the need to take expedited action on moving this bill is paramount. The Senate Energy and Natural Resources Committee has also reported out legislation to extend the life of the reserve, but that bill also does spend some of the helium revenue.

And the full Senate still needs to act and do so quickly. I remain optimistic that Congress can address this issue before the end of the fiscal year. Undoubtedly, the bipartisan process and legislative success of H.R. 527 are correlated, and I hope it is a template we can use going forward to tackle other pressing issues before this Committee.

With regard to producing more helium from Federal lands, the auction and market pricing mechanism included in H.R. 527 were designed to create incentives for additional helium production on both public and private lands. And with output from Federal Helium Reserve declining rapidly and prices rising, demand for alternative helium supplies is increasing. Operations to produce helium on public lands are pending or ongoing at seven different locations across Wyoming, Utah, Colorado, Texas, Oklahoma, and Kansas.

At some of these operations, helium is the primary target, and in others, helium is a byproduct of natural gas production. We should look to continue sourcing future helium supplies from our public lands, which means we can depend less on insecure and irregular helium supplies from Russia, Algeria, and Qatar.

But the permitting process or helium production must balance this new production with the protection of the other important uses of our public lands: conservation, recreation, hunting, and fishing. There is a review process already in place at the Interior Department to allow for the development of helium from public lands in a way that addressed those considerations.

As more companies begin to look at producing this resource from our public lands, we should rightly examine the process through which the Interior Department permits this production. But I hope that the intent of this hearing is not to pave the way for partisan legislation designed to short-circuit that permitting process or in some other way elevate helium production over all other land uses.

I yield back my time. Thank you, Mr. Chairman.

[The prepared statement of Dr. Lowenthal follows:]

**Statement of The Honorable Alan S. Lowenthal, a Representative
in Congress from the State of California**

As this Committee has thoroughly reviewed, helium is a unique and non-renewable resource critical to a variety of high-tech applications. The most pressing issue related to the helium market is the quickly approaching end of the fiscal year, which will bring the closure of the Federal Helium Reserve unless Congress and the President authorize the continued operation of the Federal Reserve. Currently, nearly half of all U.S. helium supplies and a third of global helium supplies come from the Reserve. Cutting off this supply would have disastrous consequences for hospitals, manufacturers, and researchers around the world.

That's why the House passage of H.R. 527, "The Responsible Helium Administration and Stewardship Act" this past April was so critical. That bi-partisan bill, authored by Chairman Hastings, Ranking Member Markey, Energy and Minerals Ranking Member Holt and Representative Flores passed the House in April in an overwhelming, bipartisan vote of 394 to 1.

The Senate Energy and Natural Resources Committee has also reported out legislation to extend the life of the Reserve but the full Senate still needs to act. And do so quickly. I remain optimistic that Congress can address this issue before the end of the fiscal year. Undoubtedly, the bi-partisan process and legislative success of H.R. 527 are correlated, and I hope it is a template we can use going forward to tackle other pressing issues in this committee.

With regard to producing more helium from federal lands, the auction and market pricing mechanisms included H.R. 527 were designed to incentive additional helium production, on both public and private lands. And with output from Federal Helium Reserve declining rapidly and prices rising, demand for alternative helium supplies is increasing.

Operations to produce helium on public lands are pending or ongoing at seven different locations across Wyoming, Utah, Colorado, Texas, Oklahoma, and Kansas. At some of these operations, helium is the primary target and at others helium is a by-product of natural gas production. We should look to continue sourcing future helium supplies from our public lands, which means we can depend less on insecure and irregular helium supplies from Russia, Algeria, and Qatar.

But the permitting process for helium production must balance this new production with the protection of the other important uses of our public lands—conservation, recreation, hunting, fishing. There is a review process already in place at the Interior Department to allow for the development of helium from public lands in a way that addressed those considerations. As more companies begin to look at producing this resource from our public lands, we should rightly examine the process through which the Interior Department permits this production. But I hope that the intent of this hearing is not to pave the way for partisan legislation designed to short-circuit that permitting process or in some way elevate helium production over all other land uses.

I yield back the balance of my time.

Mr. LAMBORN. You're welcome.

I would like to recognize the Chairman of the Full Committee, Representative Hastings of Washington, for 5 minutes.

STATEMENT OF THE HON. DOC HASTINGS, A REPRESENTATIVE IN CONGRESS FROM THE STATE OF WASHINGTON

Mr. HASTINGS. Thank you very much, Mr. Chairman, for holding this hearing today. By now I think we all understand how important helium is to our 21st century economy as was noted by both the Chairman and the Ranking Member. Medical equipment, computer chips, fiber optic cables, and other devices for defense purposes all require helium, and it is vital that we take steps to ensure that a stable supply of helium is available in the future.

As noted, in April, the House did pass legislation to prevent an impending helium shortage that would occur if the Federal Helium Reserve abruptly closes, which it is scheduled to do later this year. This closure would immediately cut off half of our helium supply and 30 percent of the world's helium supply, and of course at the same time, that would threaten American jobs and innovation.

So I'm hopeful we'll be able to get legislation signed into law that will prevent this immediate supply disruption, which of course would harm our economy.

But today we are examining the next steps, and rightfully so, that must be taken to continue to ensure a stable supply of helium. The reserve will eventually close, and we need to be prepared for that day. The Federal Government has been selling helium below market value, which up to now has undercut the private development of alternative sources. That must change, and we must start looking toward the future. Just like we are trying to lower our dependence on foreign oil and rare earth minerals, we also need to

ensure that we are not becoming dependent on foreign sources of helium, and the only way to prevent that from happening is by increasing helium production resources right here at home.

So the Committee looks forward to hearing from the witnesses today about what the prospects are of helium production, specifically on Federal lands, and how we can make that production a reality in the future.

And Mr. Chairman, once again, thank you for your courtesy, and thank you for holding this hearing.

[The prepared statement of Mr. Hastings follows:]

**Statement of The Honorable Doc Hastings, Chairman,
Committee on Natural Resources**

Thank you Chairman Lamborn for holding this hearing today.

By now, I think we all understand how important helium is to our 21st century economy. Medical equipment, computer chips, fiber optic cables and other devices for defense purposes all require helium. It's vital that we take steps to ensure a stable supply for the future.

In April, the House passed legislation to prevent an impending helium shortage that would occur if the Federal Helium Reserve abruptly closes, as scheduled, later this year. This closure would immediately cut off half of our domestic helium supply and 30 percent of the world's helium supply while threatening American jobs and innovation. I'm hopeful we'll be able to get legislation signed into law that will prevent this immediate supply disruption, which would severely harm our economy.

Today we're examining the next steps that must be taken to continue to ensure a stable supply of helium. The Reserve will eventually close and we need to be prepared for that day. The federal government has been selling helium below market value, which up until now has undercut the private development of alternative sources. That must change and we must start looking towards the future.

Just like we are trying to lower our dependence on foreign oil and rare earth minerals, we need to also ensure that we are not becoming dependent on foreign sources of helium. The only way to prevent that from happening is by increasing production of helium resources here at home.

I look forward to hearing from our witnesses today about the potential for helium production on federal lands and how to make it a reality in order to protect American jobs and our economy.

Mr. LAMBORN. Well, you are certainly welcome.

We will now hear from our witnesses. I'd like to acknowledge they have already come to the table: Mr. Tim Spisak, Deputy Assistant Director of Minerals and Realty Management for the Bureau of Land Management, U.S. Department of the Interior; Mr. Scott Gutberlet, Vice President of Technical and Commercial Services for QEP Resources, Inc.; Mr. Bo Sears, President of Weil Helium, LLC—if I pronounced that correctly—

Mr. SEARS. Weil.

Mr. LAMBORN. Weil. Thank you for the correction.

And Mr. Ramesh Bhawe, Director of the Inorganic Membrane Technology Laboratory Physical Chemistry of Materials Group, Oak Ridge National Laboratory.

Like all our witnesses, your written testimony will appear in full in the hearing record, so I ask that you keep your oral statements to 5 minutes as outlined in our letter to you and in Committee Rule 4(a).

Our microphones are not automatic, so you have to turn on the button when you begin speaking. The green light comes on at the beginning. You have 5 minutes. The yellow light comes on with 1

minute left, and the red light comes on, and you need to conclude after 5 minutes are up.

Mr. Spisak, you may begin. Thank you.

**STATEMENT OF TIMOTHY R. SPISAK, DEPUTY ASSISTANT
DIRECTOR, MINERALS AND REALTY MANAGEMENT, BUREAU
OF LAND MANAGEMENT, U.S. DEPARTMENT OF THE
INTERIOR**

Mr. SPISAK. Mr. Chairman and members of the Subcommittee, thank you for the opportunity to testify on domestic helium production.

As indicated by a National Academies of Sciences report published in early 2010, the market for helium has proven more volatile than expected over the last 15 years. The Department of the Interior appreciates the continued interest of Congress in exploring the issue of helium production beyond the scope of the Federal Helium Reserve. We support efforts to increase the production of helium from new sources to meet future U.S. demand.

Helium is a critical and non-renewable natural resource. The most common and economical way of capturing helium is by recovering it during natural gas processing. The BLM plays a key role in the management and stewardship of the only significant long-term storage facility of crude helium in the world known as the Federal Helium Reserve, which is located near Amarillo, Texas.

In 1929, the U.S. Bureau of Mines built the Amarillo helium plant and Cliffside gas field facilities produce helium-bearing natural gas from a naturally occurring geologic field known as the Bush Dome Reservoir.

In 1960, Congress granted the Bureau of Mines the authority to borrow funds from the U.S. Treasury to purchase and store helium with the expectation that proceeds from future sales of helium would allow the Bureau of Mines to repay the borrowing. However, compound interest and the Federal demand rarely met the expectations underlying the repayment terms of the Treasury's loan.

In 1996, Congress passed the Helium Privatization Act, which required the BLM to, quote, "offer for sale the vast majority of the stock pile of crude helium."

Today the BLM operates the Federal Helium Program with the primary goals of paying off the helium debt, which we anticipate doing by the beginning of the next fiscal year and providing the resource to meet public and private needs.

While sales of the crude helium to private refiners make the most significant contributions toward paying off the helium debt, the BLM also manages the In-Kind Program, which supplies helium to Federal agencies and grant holders for operations and research through private authorized Federal helium suppliers.

Since production of crude helium from the reserve is currently in decline, other domestic supplies of helium will be needed to meet future U.S. demand without having to import helium. The BLM has processes in place to analyze and approve applications for helium production on Federal lands, both in combination with natural gas production processing and for drilling proposals focused exclusively on helium production.

Because the helium on Federal lands is reserved to the United States, natural gas lessees can enter into additional contracts with the BLM to provide for the processing and sale of the helium. Similar contracts can also be used to enable the recovery of helium as a primary gas in combination with our oil and gas regulations. This process is used when the gas composition in a reservoir consists of a relatively higher helium concentration in a low BTU gas stream.

During Fiscal Year 2012, the Department of the Interior collected over \$10.4 million in revenue from the sale of about 1.4 billion cubic feet of helium produced from Federal lands. While the long-term potential for such production remains unclear, the BLM has noticed a recent increase in expressions of interest. The BLM looks forward to working with the interested parties on helium production contracts that will help meet the helium needs for the country.

Thank you for the opportunity to testify today. The BLM welcomes the further discussion about the Federal Helium Program, and I would be happy to answer any questions that the Subcommittee may have.

[The prepared statement of Mr. Spisak follows:]

Statement of Timothy R. Spisak, Deputy Assistant Director, Minerals and Realty Management, Bureau of Land Management, U.S. Department of the Interior

Mr. Chairman and members of the Subcommittee, thank you for the opportunity to testify on domestic helium production. As indicated by a National Academy of Sciences (NAS) report published in early 2010, the market for helium has proven more volatile than expected when the Helium Privatization Act of 1996 became law. The report also concluded that the requirement that the Bureau of Land Management (BLM) offer for sale nearly all of the Federal Helium Reserve by 2015 could pose a threat to the availability of this resource for future U.S. research, scientific, technical, biomedical, and national security users of helium. The Department of the Interior appreciates the continued interest of the Congress in exploring the issue of helium production beyond the scope of the Reserve and supports efforts to increase the production of helium from new sources to meet future U.S. demand.

Background

Helium is a critical, non-renewable natural resource that plays an important role in research, medical imaging, space exploration, military reconnaissance, fiber optics manufacturing, welding and commercial diving. According to the NAS, helium's best known property, being lighter than air, means "that every unit of helium that is produced and used today will eventually escape the Earth's atmosphere and become one less unit available for use tomorrow."

The most common and economical way of capturing helium is by stripping it from natural gas during gas production. Geologic conditions in Texas, Oklahoma, and Kansas make the natural gas in these areas some of the most helium-rich in the United States, ranging from 0.5 to 1.5 percent of the gas extracted during production. The BLM plays a key role in the careful management and stewardship of the only significant long-term storage facility for crude helium in the world, known as the Federal Helium Reserve (Reserve), which supplies approximately 42 percent of domestic demand and approximately 35 percent of global demand for crude helium.

The Federal Helium Program

Because of helium's potential to lift military reconnaissance devices high above battlefields, the Federal government's interest in the resource dates back to World War I. Recognizing this key military use for helium, the Mineral Leasing Act of 1920 reserved to the Federal government all helium produced on Federal lands—a reservation that remains in effect today. After World War I, recognition of the potential for helium recovery in the Texas Panhandle, Western Oklahoma, and Kansas area (collectively, the "Hugoton" field) led to the development of the Federal helium program focused in that area. In 1929, the Bureau of Mines built the Amarillo Helium Plant and Cliffside Gasfield Facility near Amarillo, Texas, to produce helium-bearing natural gas from a naturally occurring geologic field known as the Bush Dome Reservoir.

After World War II, Federal use of helium shifted toward applications related to space exploration, and in 1960 Congress passed the Helium Act Amendments of 1960. This Act changed the program's mandate from exclusive government production of helium to conservation of the resource. This was to be accomplished by executing contracts with private natural gas producers to purchase extracted crude helium for the Federal government to store in the Bush Dome Reservoir. The Act granted the Bureau of Mines, the BLM's predecessor agency in managing this program, the authority to borrow funds from the U.S. Treasury to purchase the helium, with the expectation that the proceeds from future sales of helium would allow the Bureau of Mines to repay the debt. This borrowing authority, established by Congress in lieu of a direct appropriation, required the Bureau of Mines to repay the loan by 1985. Subsequent legislation extended the deadline to 1995.

Federal demands for helium rarely, if ever, met the expectations underlying the terms of the U.S. Treasury's loan to the Bureau of Mines. When the 1995 deadline to pay off the debt arrived, the \$252 million the Bureau had spent on privately-produced helium had increased to \$1.3 billion (principal and interest), and the Bureau of Mines appeared to have little prospect of repaying the debt. In his 1995 State of the Union address, President Bill Clinton stated that it was his Administration's goal to privatize the Federal helium program.

Congress subsequently passed the Helium Privatization Act of 1996 (HPA), which required the BLM (which assumed jurisdiction over the program after the termination of the Bureau of Mines) to make available for sale the vast majority of the stockpile of crude helium. The mandate directed the BLM to begin selling helium no later than 2005, in order to avoid market disruption. The BLM was to make a consistent amount of helium available every year at a price based on the amount of remaining helium debt and the amount of helium in storage. When Congress passed the HPA, there was approximately 30.5 billion standard cubic feet (scf) of helium in storage in the Bush Dome Reservoir. The HPA mandated the BLM to make available for sale all of the helium in excess of a 600 million scf permanent reserve.

Additionally, the HPA required the BLM to cease all helium production, refining, and marketing activities to effectively privatize the refined helium market in the United States. Finally, the Act provided for the NAS to review the impacts of the 1996 Act. The NAS published its first study in 2000, and released a follow-up report in 2010.

The BLM's Helium Operations

The BLM currently operates the Federal helium program with the primary goals of supplying helium to meet the Nation's needs of Federal helium users and paying off the "helium debt." To this end, the BLM has paid approximately \$1.33 billion to the U.S. Treasury since 1995. This constitutes substantial progress toward eliminating the helium debt, which the HPA froze at approximately \$1.37 billion. During FY 2012, the helium debt was reduced by an additional \$180 million from Reserve sales, resulting in an outstanding balance of approximately \$44 million at the end of the fiscal year.

According to the HPA, once the helium debt is retired, the Helium Production Fund (used to fund the BLM's helium program operational expenses) would be dissolved and all future receipts would be deposited directly into the general fund of the U.S. Treasury. The BLM has generated enough revenue during this fiscal year through currently authorized helium sales to pay off the debt at the beginning of FY 2014.

The BLM's current helium program, with a workforce of 51 full-time equivalents (FTE), operates not only the original storage and pipeline system, but also a crude helium enrichment unit, owned by private industry refiners, that facilitates transmission of helium to private helium operations on the BLM's helium pipeline. Among its responsibilities, the BLM administers the sale of crude helium to private refiners. These sales make the most significant contributions toward paying off the helium debt. In addition, the agency conducts domestic helium resource evaluation and reserve tracking to determine the extent of available helium resources. The BLM is also responsible for administering helium extracted from Federal resources, including management of fees and royalty contracts. These operations are not limited to the Hugoton gas field, but also occur in fields in Colorado, Wyoming, Utah, and any other state where producers extract helium from the Federal mineral estate.

Another major part of the BLM's helium program is the "In-Kind" program, which supplies helium to Federal agencies (e.g., the Department of Energy and the National Aeronautics and Space Administration) for operations and/or research. Before the Helium Privatization Act, Congress required Federal agencies to purchase their

refined helium supplies from the Bureau of Mines. Under the current In-Kind program, Federal agencies purchase all of their refined helium from private suppliers who, in turn, are required to purchase a commensurate amount of crude helium from the Reserve. In FY 2012, Federal agencies purchased \$10.3 million of helium through the In-Kind program.

The National Academy of Sciences Reports

In 2000, the NAS published its first analysis of the impacts of the HPA. Its general finding was that the Act would not have an impact on helium users. Additionally, the NAS report concluded that because the price-setting mechanism was based on the amount of the helium debt, and not the market for helium, the government's significantly higher price would mean the helium refining industry would buy crude helium from the BLM only as a last resort for fulfilling private contracts. However, private helium refiners would still be required to purchase crude helium from the BLM under the In-Kind program.

Over the course of the last decade, however, it has become apparent that assumptions underlying the 2000 NAS Report did not hold. First, the NAS's assumption that "[t]he price of helium [would] probably remain stable through at least 2010" has proven faulty. The market for helium has seen significant fluctuations on both the demand side—which dropped significantly in 2008 after peaking the prior year—and on the supply side, which experienced a significant decline in private supplies between 2006 and 2008. In the face of this volatility, prices for helium rose steadily over the course of the decade. By 2008, the market price for helium began to hover near the BLM's price, leading to greater withdrawals from the Reserve than the 2000 NAS Report anticipated.

Another market impact that the 2000 NAS Report did not address was international supply and demand for helium. According to the U.S. Department of Commerce, domestic consumption of helium decreased 2.7 percent per year from 2000–2007, while exports to the Pacific Rim grew 6.8 percent annually, exceeding the 5.1 percent growth rate in Europe. The international market also experienced supply issues because of refining capacity problems at plants in Qatar and Algeria, which would normally help supply both Europe and Asia.

In early 2010, the NAS released a follow-up report on the BLM's management of the Reserve. The report, entitled "Selling the Nation's Helium Reserve," focused on "whether the interests of the United States have been well served by the [HPA] and, in particular, whether selling off the Reserve has had any adverse effect on U.S. scientific, technical, biomedical, and national security users of helium."

The 2010 NAS report, which identified some shortcomings of the 2000 report, takes a markedly different tone than the 2000 report. This change in approach reflects the volatility of the helium market over the last decade. The NAS report analyzes the relationship between supply and demand for helium on a domestic and international basis, as well as the BLM's management of the Reserve under the HPA. The report concludes that the HPA mandated sell-off is negatively impacting the needs of both current and future users of helium in the United States. This conclusion is the driving force behind a series of recommendations in the report directed at the BLM and the Congress.

Helium Production on Federal Lands

Since production of crude helium from the Reserve is currently in decline, other domestic supplies of helium will be needed to meet future U.S. demand without having to import helium.

The BLM has processes in place to analyze and approve applications for helium production on Federal lands—both in combination with natural gas production processes and for drilling proposals focused exclusively on helium production. As stated above, helium commonly exists as a minor component of most natural gas plays. When natural gas is produced, it is typically transported by pipeline to a processing plant where it is separated into marketable components, which could include helium if it is a viable option. Because the helium on Federal lands is reserved to the United States, natural gas lessees can enter into additional contracts with the BLM to provide for the processing and sale of the helium. This type of arrangement occurs near Kemmerer, Wyoming, where helium produced from Federal lands partially supplies an ExxonMobil helium refinery.

Similar contracts can also be used to enable the recovery of helium as a primary gas in combination with Applications for Permit to Drill (APDs). This method is feasible where the gas composition in a reservoir consists of relatively higher helium concentration in a low Btu gas stream. For example, the BLM recently approved an APD for a 1,100-foot exploratory well in the Harley Dome gas field in eastern Utah and an associated right-of-way to transport the produced gas via a surface pipeline

to a new gas processing plant. If sufficient quality and quantity of helium is confirmed, the proponent will construct a four-inch, 7,183-foot pipeline to a small plant where the helium will be removed from the gas stream and compressed for truck transport. The well will be located five miles west of the Utah-Colorado border on Federal lands in northern Grand County and the helium extraction plant will be located 1.4 miles from the well on private property.

During FY 2012, the Department of the Interior collected over \$10.4 million in revenues from the sale of helium produced from Federal lands. While the long-term potential for such production remains unclear, the BLM has noticed a recent increase in expressions of interest for helium production on Federal lands. The BLM looks forward to working with interested parties on helium production contracts that will help meet the helium needs of the country.

Conclusion

Thank you for the opportunity to testify today. The BLM welcomes further discussion about the Federal helium program. Many Federal agencies depend on helium for scientific research, aerospace projects, and defense purposes. Since its formal discovery almost 120 years ago, helium has proven to be an increasingly important natural resource. The expansion of helium-related technology and declining domestic reserves means the importance of helium as a strategic resource is likely to increase. The BLM continues to serve the country by effectively managing the Reserve, and working with natural gas producers to efficiently extract helium from natural gas. I would be happy to answer any questions the Subcommittee may have.

Mr. LAMBORN. All right. Thank you.
Mr. Gutberlet.

STATEMENT OF SCOTT GUTBERLET, VICE PRESIDENT OF TECHNICAL AND COMMERCIAL SERVICES, QEP RESOURCES, INC.

Mr. GUTBERLET. Thank you, Chairman Lamborn, Ranking Member Lowenthal, members of the Committee, my name is Scott Gutberlet.

I'm the Vice President of Commercial and Technical Services for QEP Resources located in Denver, Colorado. I'm also a degreed petroleum engineer with 25 years of experience in the industry, and I currently manage various commercial matters for QEP, including projects that may have helium potential.

QEP Resources is the largest publicly owned exploration and production company headquartered in Colorado, and we have 90-plus years of experience in the energy business. My complete testimony has been filed with the Committee, and I appreciate the opportunity to discuss our Nation's helium supply situation from our perspective as a major oil and gas operator on Federal lands.

More and more, public policy debates relating to the health of our economy are focused on monetary and fiscal issues, so it's great to be participating in an open and honest conversation that deals with real people building real and operating real facilities, producing an incredibly valuable and unique commodity here in the United States that is so essential to so many aspects of our high-tech economy as well as our national security.

QEP has safely and responsibly produced oil and gas on Federal lands for our entire 90-plus years history. We are a major lease holder of Federal lands in the Rockies, which means we understand what it takes to successfully operate on public lands. We are also fully cognizant of the responsibilities and trust that is inherent to operating on these lands.

QEP is also a significant player on the midstream business, which involves building and operating natural gas processing plants. We have many years of experience with these capital-intensive and complex facilities. The operation of natural gas processing plants is required for helium production because of the unique processing techniques necessary to recover helium from a produced gas stream.

As you know, helium is always a byproduct of natural gas production and never found as a primary volume component of a gas stream. Oil and gas production occurs in 32 of our 50 States. Unfortunately, commercial quantities of helium are only found in a small fraction of the fields around the country. However, we are fortunate to have the right geologic conditions in several parts of the country which allow for helium concentrations much higher than the rest of the world.

This is the reason why, for so many decades, the U.S. was the principal supplier of low-cost and reliable helium to governments and industries around the world. Some believe that helium projects in the Middle East and Russia will make up for declining U.S. production. We believe it's risky to rely on foreign governments for such a strategically important commodity. Simply put, we need to do more to ensure the domestic supply of this vital resource.

The western U.S. has substantial undeveloped helium resources in Wyoming, eastern Utah, and the Four Corners area of Utah, Colorado, New Mexico, and Arizona. These areas include large amounts of Federal mineral and Federal surface estate, which in most cases is managed by the Bureau of Land Management.

The alarm raised by many consumers on what will happen to helium markets once the National Helium Reserve is depleted and the Nation is scrambling to identify next sources of dependable and reasonably priced, long-term supply, we appreciate and agree with their concerns.

This Committee's bill, H.R. 527, dealing with the National Helium Reserve outside of Amarillo is an excellent step forward and was much needed for all concerned. The National Helium Reserve currently supplies approximately 50 percent of the U.S. demand and 30 percent of the world demand, but it's a declining reserve that has a finite remaining life. Congress can and should do more to provide regulatory certainty for natural gas producers that want to invest and bring new helium resources online.

Like all drilling operations, helium-related projects on Federal lands are subject to the National Environmental Policy Act, or NEPA, a law which requires comprehensive environmental reviews, public comment, and outside participation, which can be long and quite costly. Such NEPA requirements routinely lead to delays which, depending on the project, can be many years, even in areas that have had significant ongoing oil and gas activity for many decades.

Companies need to be confident that Federal agencies will issue the appropriate permits in a timely manner. We would encourage you to look at legislative language, which would provide clear guidelines to Federal agencies, as well as the companies that are looking to produce helium, without weakening NEPA.

Congress can draw up a number of existing precedents under current law to ensure timely permitting of helium projects without limiting or foregoing the necessary environmental reviews. Such legislative signals would demonstrate that helium-related projects are recognized as a priority for development on public lands. As I stated at the beginning of my comments, we recognize the responsibilities and trust inherent to operating on Federal lands. We are only suggesting you provide for the dedication and prioritization of resources to assure helium-related projects on Federal lands can be brought online in a reasonable time frame.

We encourage you to act before the helium supply demand situation reaches a critical stage and take this opportunity to promote long-term helium supplies from domestic sources via sensible and practical regulatory oversight.

Thanks again for the opportunity to speak, and I look forward to any questions you may have.

[The prepared statement of Mr. Gutberlet follows:]

**Statement of Scott Gutberlet, Vice President,
Commercial and Technical Services, on behalf of QEP Resources, Inc.**

Chairman Lamborn, Representative Holt and Members of the Committee, thank you for the opportunity to provide testimony for today's hearing regarding helium supply and production from federal lands. My name is Scott Gutberlet and I am the Vice President of Commercial and Technical Services for QEP Resources, Inc ("QEP"). As a way of background, I have a Bachelor of Science degree in Petroleum Engineering from the Colorado School of Mines and 25 years of experience in the U.S. exploration and production industry in reservoir engineering, midstream business development, strategic planning, and asset management. I currently manage various commercial matters for QEP including projects that have the potential to produce helium. With a company value in excess of \$8 billion, QEP is the largest publicly owned independent natural gas and crude oil exploration and production company headquartered in Denver, Colorado. We have been producing oil and gas in the Rockies since the 1920's and our assets include large acreage positions on federal lands across multiple states. QEP also has significant experience operating natural gas processing plants which is a crucial skill-set in any helium production project due to the unique processing techniques necessary to extract what are generally low concentrations of helium from the production stream and make commercial quantities available for sale.

Helium is a vital product for America's high tech manufacturers including its use in MRI machines, semiconductor manufacturing, and advanced nuclear reactor designs. In addition, it is essential to the construction industry in certain arc welding operations. And as you know, it is also a resource of strategic importance for the space program and the defense industry.

The exploration and production industry appreciates the amount of time and dedicated work your committee is taking to understand helium production and supply and we also applaud this committee's previous work on H.R. 527, "Responsible Helium Administration and Stewardship Act" dealing with the National Helium Reserve outside of Amarillo, TX. The language in the bill which was adopted by the House to promote price transparency is a positive sign for companies that are looking to increase our nation's helium supply. Creating federal policies that cause helium to be sold at its true market value is an important step for companies like QEP who are looking to potentially enter the helium market. However, Congress can do even more to promote the development of future supplies of helium.

Three years after the discovery of natural gas in the Baxter Basin of southwest Wyoming that was the beginning of QEP Resources and its predecessor company, the federal government in 1925 had the vision and incredible foresight to establish the National Helium Reserve in response to national security needs and the recognition that since helium was a byproduct of natural gas production, special efforts needed to be made to facilitate the production and extraction of this unique, non-renewable element. For decades, the U.S. was the primary helium producer to industries and nations around the world. We are fortunate to have the right geologic conditions in many parts of the country which make possible helium concentrations much higher than most of the rest of the world. While technological progress has

devised more and more uses for helium, the original conclusion by the federal government that helium is a strategic national resource remains unchanged.

Rather than relying on imported helium from unstable and high-priced international sources, we should look to continue to develop our helium resources here in the U.S. The U.S. has significant remaining helium potential, much of which is on the federal mineral estate. As referenced by several witnesses during the U.S. Senate Energy and Natural Resources Committee May 7th hearing, the western U.S. has substantial undeveloped helium resources in Wyoming, Utah, and the Four Corners area. These areas include large amounts of federal mineral and federal surface estate which in most cases is managed by the Bureau of Land Management.

Helium end-users are very concerned about a sufficient supply of helium, not only in the short-term but also in the long-term. We appreciate and agree with their concern. A constant alarm raised by many end-users is what will happen to helium markets once the National Helium Reserve is depleted and the nation is scrambling to identify the next sources of reliable and reasonably priced long-term supply. The National Helium Reserve currently supplies approximately 50% of the U.S. helium demand and approximately 30% of the world's demand but it is a declining reserve that has a finite remaining life.

Due to the technically complex and remote nature of these projects combined with long lead times involved with engineering and construction, minimizing risks for project success is essential. Congress can and should do more to provide regulatory certainty for natural gas producers that want to invest and bring new helium resources online. Operating on federal lands creates unique issues for everyone, but especially for those targeting helium extraction and production. Like all drilling operations, helium related projects are subject to the National Environmental Policy Act (NEPA) when it comes to approval for exploration and production activities on federal lands. NEPA invites public comment and outside participation that creates additional reviews which can often be very lengthy and costly. Such NEPA requirements routinely lead to delays which, depending on the complexity of the project, can be at least several years, even in areas that have had significant ongoing oil and gas development activity for decades.

A company needs to be confident that federal agencies will issue the appropriate permits in a timely manner which requires the agencies to have the staffing resources to do so. We encourage you to include language in future legislation which would provide clear guidelines to federal agencies, as well as the companies that are looking to produce helium. Such signals should advocate that helium related projects be recognized as a priority when it comes to development on public lands. Congress can draw upon a number of existing precedents under current law to ensure timely permitting of helium projects without limiting or forgoing the necessary environmental reviews. We are not suggesting you do anything to weaken NEPA reviews. Rather, we are simply suggesting you provide for the dedication and prioritization of resources to assure helium related projects can be brought online in an expedited fashion.

While some in the end-user community have a primary focus on the National Helium Reserve, we believe Congress needs to do more to focus on getting more helium out of the ground from within the U.S. While there is hope Qatar and Russia's helium resources will make up for the declining U.S. production, we believe it is short-sighted and very risky to rely on foreign governments to provide such an element of strategic and economic importance. We believe Congress needs to act now to send signals to the private sector and the relevant federal agencies to encourage additional helium supply be developed.

We would also persuade you to look for opportunities to help promote production and conservation of helium wherever possible. Helium production from federal lands has the added benefit of requiring the operator of helium producing wells to pay a fee to the federal government to extract and sell helium. Helium production and the resulting federal government revenues can grow together with the right price signals and a smart regulatory structure in place, especially for projects located on federal lands.

Thank you for the opportunity to provide testimony to this committee. We encourage you to act proactively before the helium supply-demand situation reaches a critical stage and take this opportunity to promote long-term helium supplies from domestic sources via sensible and practical regulatory oversight. I welcome further questions and discussion about helium production and the federal government's role in helping meet our nation's future helium needs.

Mr. LAMBORN. Thank you.
Mr. Sears.

**STATEMENT OF WHEELER M. "BO" SEARS, JR.,
PRESIDENT, WEIL HELIUM, LLC**

Mr. SEARS. Chairman Lamborn, Ranking Member Lowenthal, and members of the Subcommittee, I would like to thank you for the opportunity to testify today about securing America's future helium supply and provide some ideas how this can become reality.

My name is Bo Sears, and I am president of Weil Helium, LLC, based in Richmond, Virginia. Weil's primary objective is to explore for and produce helium resources in the United States and Canada. We successfully drilled a well exclusively for helium last year in northern Montana on private lands where development plans are currently underway. We have also begun testing on another significant project in Southern Saskatchewan, Canada.

These projects, like all of the other helium projects in our portfolio, have been targeted only for their helium content as there are no appreciable amounts of hydrocarbons in these gas streams. Weil is pursuing projects where helium is the primary target as opposed to a secondary or tertiary target like those found from traditional helium sources.

We appreciate the hard work the Subcommittee has undertaken in its attempt to prolong the life of Cliffside Field. We are excited to address where our next domestic sources of helium will come from and believe this hearing is an important step to ensure that the United States does not become a helium importer for the first time in its history.

Weil Helium has various helium projects on Federal lands, and we understand that one of the objectives of this hearing is to discuss how to streamline existing helium regulations in a manner that promotes new domestic helium supplies. The process of drilling for helium is virtually the same as traditional oil and gas exploration projects. Like oil and gas, helium is discovered with a drill bit.

The key difference, however, lies solely with helium's treatment under a standard Federal and gas lease. The United States Minerals Leasing Act of 1920 states that any helium found on Federal land belongs to the Federal Government. As a result of un-amended portions of the 1920 Act, the helium aspect of this Act needs some modernizing. If changes are not made, the process for dealing with helium wells on Federal lands becomes unreasonably long. A recent example from our experience may give the panel some insight.

We nominated Federal acreage in Utah for a standard Federal oil and gas lease in February of 2011 and waited almost 2 years for it to appear on the docket for a competitive bid. Once acquired, we immediately requested from the BLM a consent to extract helium as a primary gas. I'm happy to say that we received authorization in June of this year, which was much faster than anticipated, but we are far from finished.

It is now necessary to obtain an interdisciplinary review required by the National Environmental Protection Act, or NEPA. In addition, approval of a helium processing agreement with the BLM is required.

Assuming we obtain the NEPA approval, a permit to drill, we anticipate that the earliest we will be able to commence our field de-

velopment work will be mid-2014. Thus from start to finish on this Federal Helium Project, the time required will have been over 3½ years. If Congress truly understands the critical nature of our helium supply situation here in the U.S., then helium projects need to be put into a higher gear procedurally.

Another important factor that will inspire new supplies of helium from groups like us is the helium auction language that was presented by this body, and we applaud the hard work and dedication this Committee and its staff members have done to pass H.R. 527. A market-derived price for domestic helium is fundamentally critical for companies to invest in helium projects.

Weil is ready to underwrite some risk dollars to bring in new helium, but market prices are an important component of this exercise. Without market pricing very soon, we are fearful that the price of BLM helium will remain at submarket levels, and a headwind will remain for the helium prospectors. It is extremely difficult for investors to adequately weigh the merits of an investment in helium exploration unless there is some upside potential for helium prices.

There are estimates that say Cliffside Field will be depleted in 5 to 10 years. What happens after that? If we allow Cliffside Field to simply deplete without even an effort to re-stimulate helium production, this inaction will hurt this country strategically, and we will be left to import this indispensable commodity from countries such as Algeria, Qatar, and Russia for the long term.

We believe that imported helium will result in a new supply and demand dynamics. These foreign providers of helium will not be relying on the 1996 Act for ideas about how they price their helium. Higher imports mean higher prices and loss of control of product. In short, we need your help for an aggressive streamlining of processes to encourage risk capital into the helium discovery world.

We are most appreciative of this body's version of the helium legislation that allows for the market forces to impact markets sooner rather than later, but the market's work to provide the investment dollars needed to pursue future projects, and they will do just that.

Thank you for the opportunity to testify today, and I look forward to any questions you might have.

[The prepared statement of Mr. Wheeler M. "Bo" Sears follows:]

**Statement of Wheeler M. "Bo" Sears, Jr., President,
Weil Helium, LLC**

Chairman Lamborn, Ranking Member Holt, and Members of the Subcommittee, I want to thank you for the opportunity to testify today about securing America's Future Helium Supply and provide some ideas how this can become reality. My name is Bo Sears and I am President of Weil Helium, LLC (a subsidiary of Weil Group Resources, LLC) based in Richmond, Virginia. Weil's primary objective is to explore for, and produce helium resources in the United States and Canada.

We successfully drilled a well exclusively for helium last year in northern Montana where development plans are currently underway. We have also begun testing on another significant project in southern Saskatchewan, Canada. These projects, like all of the other helium projects in our portfolio, have been targeted only for their helium content as there are no appreciable amounts of hydrocarbons (i.e. no oil and/or natural gas¹) in these gas streams. Weil is pursuing projects where he-

¹ Natural gas is commonly defined as methane (CH₄) although natural gas could infer any natural element or compound that is a gas in its natural state.

lium is the primary target as opposed to a secondary or tertiary target like those found from traditional helium sources.

We appreciate the hard work the Subcommittee has undertaken in its attempt to prolong the life of Cliffside Field. We are excited to address where our next domestic resources of helium will come from and believe this Hearing is an important step to ensure that the United States does not become a helium importer for the first time in its history.

Weil Helium has various helium projects on Federal Lands and we understand that one of the objectives of this Hearing is to discuss how to streamline existing helium regulations in a manner that promotes new domestic helium supplies. The process of drilling for helium is virtually the same as traditional oil and gas exploration projects. Like oil and gas, helium is discovered with a drill bit. By most accounts, helium exploration is a “conventional” extraction endeavor and I know of no helium well that has ever been frac’ed. The key difference, however, lies solely with helium’s treatment under a standard Federal Oil and Gas lease.

The United States Minerals Leasing Act of 1920 states that any helium found on Federal Land belongs to the Federal Government. The reason for this stipulation was due to the fact that the United States had successfully proven, just before the end of World War I, that they could economically extract helium from natural gas from the Petrolia Field in North Texas for processing in Fort Worth, Texas. This was a feat deemed impossible just five years prior due to the low concentrations of helium in the gas and the lack of processing know-how. The United States continued the helium program with haste despite the armistice and the United States’ first semi-dirigible, the Navy’s C-7, took its maiden flight on December 5, 1920. At the time of the passage of the Minerals Leasing Act of 1920, helium’s only known use was for its lighter-than-air properties. It wasn’t until 1925 when another use for helium was discovered. It was found that helium could replace nitrogen for deep sea dives thus preventing Caisson’s disease, or “the bends.”

As a result of unamended aspects of the 1920 Act, the helium aspect of this Act needs some modernizing. If changes are not made, the process for drilling helium wells on Federal lands becomes unreasonably long. A recent example from our experience may give the panel some insight. We nominated Federal acreage for a standard Federal Oil and Gas lease in February of 2011 and waited almost two years (November 2012) for it to appear on the docket for competitive bid. While our primary focus was the inherent helium resource (and helium is explicitly excluded from Federal oil & gas leases), we lost the auction to an oil and gas speculator who believed this area contained an unconventional hydrocarbon resource. Fortunately, we reached agreement with the winning bidder for Weil to pursue only the helium zones in this project area because we were instructed by the BLM that helium rights would only be granted to holders of the oil & gas rights. We immediately requested from the BLM a consent to extract helium as a primary gas. I’m happy to say that we received authorization in June of this year which was much faster than anticipated. The BLM has done a considerable job navigating these tricky waters and we would like to thank Tim Spisak and all of his colleagues at the BLM, the Amarillo, Texas Field Office, the State Office in Salt Lake City, and the Price, Utah Field Office for being so proactive in helping us with this step. But we are far from finished. It is now necessary to obtain an inter-disciplinary review required by the National Environmental Protection Act (“NEPA”). In addition, approval of a Helium Processing Agreement with the BLM is required. Assuming we obtain the NEPA approval and approval of permit to drill, we anticipate that the earliest we will be able to commence our field development work will be mid 2014. Thus, from start to finish on this Federal Helium project, the time required will have been over three and a half years.

The uncertain timeframes for pursuing helium on Federal lands is one reason why Weil has focused on private lands here in the United States and Crown lands in Canada. Our Montana helium project, which is located on private lands, took a total of 3 months from the time we crafted an agreement with the existing operator to the time we drilled our helium test well. On our Canadian project, the process took a total of 4 months. I will assert here that in order to bring new domestic supplies online from Federal Lands, the Federal time frame from start to finish needs to be reduced significantly. If the Congress truly understands the critical nature of our helium supply situation here in the U.S., then helium projects need to be put into a higher gear procedurally.

Another important factor that will inspire new supplies of helium from groups like us is the helium auction language that was presented by this body and we applaud the hard work and dedication this committee and its staff members have done to pass H.R. 527.

A market derived price for domestic helium is fundamentally critical for companies to invest in helium projects. Weil is ready to underwrite some risk dollars to bring in new helium, but 'market prices' are an important component of this exercise. Without market pricing very soon, we are fearful that the price of BLM helium will remain at submarket levels and a headwind will remain for the helium prospectors. It is extremely difficult for investors to adequately weigh the merits of an investment in helium exploration and production unless there is some upside potential for helium prices. As it currently stands, the 1996 Helium Privatization Act (which is still in effect) has anchored helium prices at submarket levels for some years now and new volumes have been slow to materialize.

Also as a result of the '96 Act, the refiners on the pipeline continue to enjoy a pricing structure, which is formulaic and arbitrary. More importantly, and according to the National Academy of Sciences, the price of BLM helium is below supply and demand driven market prices. The major industrial gas companies are, admittedly, not in the helium drilling business, so declining sources of domestic helium should come as no surprise knowing that their BLM quota will satisfy them until new foreign sources start rolling in. We believe the helium paradigm has shifted and we have no choice but to begin exploratory efforts to ensure our future domestic supply.

There are estimates that say the Cliffside Field will be depleted in 5 to 10 years. What happens after that? Looking back, wasn't our Congress proactively wise when it established the Federal Helium Reserve in 1960. Remember, 1960 was a time before MRI machines, fiber optic cables, superconductive colliders, etc. If we allow the Cliffside Field to simply deplete without even an effort to re-stimulate helium production, this inaction will hurt this country strategically and we will be left to import this indispensable commodity from countries such as Algeria, Qatar, and Russia for the long-term. We believe that imported helium will result in new supply and demand dynamics. These foreign providers of helium will not be relying on the 1996 Act for ideas about how they price their helium. Higher imports will mean higher prices and loss of control of product. In short, we need your help for an aggressive streamlining of processes to encourage risk capital into the helium discovery world. We are most appreciative of this body's version of the helium legislation that allows for the market forces to impact markets sooner rather than later. Let the markets work to provide the investment dollars needed to pursue future projects and they will do just that.

Thank you for the opportunity to testify today and I look forward to any questions you might have.

[A letter attached to Mr. Sears statement follows:]



United States Department of the Interior
BUREAU OF LAND MANAGEMENT
Washington, D.C. 20240
<http://www.blm.gov>



JUN - 3 2013

Mr. Jeffrey W. Vogt
Chief Executive Officer
Weil Group Resources, LLC
416 West Franklin Street
Richmond, Virginia 23220

Dear Mr. Vogt:

Thank you for your March 19, 2013, letter to then-Secretary of the Interior Ken Salazar requesting a waiver to develop wells on Federal lands for the purpose of helium recovery. The Bureau of Land Management (BLM) was asked to respond to your letter.

Your request for authorization to process helium as a primary gas has been granted, contingent upon Weil Group Resources, LLC obtaining a signed helium contract for Extraction and Sale of Federal Helium. To obtain a contract for Extraction and Sale of Federal Helium, please contact Joe Peterson, Assistant Field Manager, BLM Amarillo Field Office, at 806-356-1030.

Procedures followed under your oil and gas lease will provide the mechanism to begin on-the-ground operations (in accordance with 43 CFR 3160). If you have any questions concerning operations on your oil and gas lease, please contact the BLM-Utah Price Field Office, at 435-636-3637.

Thank you for supporting BLM's efforts to conserve and produce public helium resources in an environmentally sound manner.

Sincerely,


Neil Kornze
Principal Deputy Director

Mr. LAMBORN. Thank you, Mr. Sears.
Mr. Bhavé, you are recognized for 5 minutes.

STATEMENT OF RAMESH R. BHAVE, PH.D., DIRECTOR, INORGANIC MEMBRANE TECHNOLOGY LABORATORY PHYSICAL CHEMISTRY OF MATERIALS GROUP, OAK RIDGE NATIONAL LABORATORY

Dr. BHAVE. Chairman Lamborn, Chairman Hastings, Ranking Member Lowenthal, and members of the Subcommittee. Thank you for the invitation and the honor to appear before you today.

My name is Ramesh Bhavé, and I am the Director of the Inorganic Membrane Technology Lab at the Oak Ridge National Laboratory in Oak Ridge, Tennessee.

I am pleased to be here to discuss ORNL's gas separation research and membrane technology development and its collaborative

work with small business to incorporate this technology into a system that can efficiently and cost effectively separate helium from other gas streams.

Virtually all helium produced in the U.S. today is from fuel-rich natural gas deposits that contains sufficient helium to enable economic recovery. However, U.S. production of helium is in rapid decline as these currently viable, rich reserves are being depleted. This, coupled with rising global demand, has resulted in a shortage causing prices to rise. The price of helium has increased four-fold from 1998 to 2013.

Helios Energy, a small business located in western New York, estimated that a substantial amount of helium exceeding that in the rich fields used today is present in lower-grade fields where the amount of energy required to extract helium is cost-prohibitive with the existing technology.

In order to solve this problem, Helios set out to develop an advanced technology to cost effectively recover helium from these vast, but low-grade, sources. In 2010, Helios received a DOE small business technology transfer award to fund their efforts. ORNL's recognized leadership in gas separation and selective enrichment technologies goes back more than 60 years and is rooted in the Manhattan Project.

The primary role of ORNL in this project is to develop and perfect advanced gas separation membranes that are used as part of the hybrid system. ORNL molecular sieve membranes enable the separation of helium based on the fact that the helium molecule is significantly smaller than all other molecules such as nitrogen and methane present in the marginal helium sources.

Phase one of the project was successfully completed in early 2011 and achieved all of its technical objectives. Phase two of the project has built on the progress made in phase one and has advanced the technology to pilot scale. The project is on track to meet all of its technical and economical targets and objectives. Helios and ORNL are now very well positioned to continue the development of the hybrid system and membrane technologies for helium recovery and recycle to ensure a stable, reliable, competitively priced supply of helium for several high-technology and research applications.

Helios has had some preliminary discussions with a global leader in helium in production that has expressed interest in this system and hosting the field demonstration plant. The timeline for commercialization will depend on the availability of Federal and private industry funding. We would not be here today if we had not invested in research and development. Based on conversations with DOE, it is not clear if phase three funding is available, but we continue to explore possible options. We believe implementation of such new options for producing more helium is critical to address the shortage.

Thank you, and I'll be happy to answer any questions.

[The prepared statement of Dr. Bhavé follows:]

Statement of Ramesh R. Bhavé, Ph.D. Principal Investigator and Director, Inorganic Membrane Technology Laboratory Materials Science & Technology Division, Oak Ridge National Laboratory, Oak Ridge, TN

Chairman Lamborn, Ranking Member Holt, and members of the subcommittee: Thank you for the invitation and the honor to appear before you today. My name

is Ramesh Bhawe, and I am the Director of the Inorganic Membrane Technology Lab at Oak Ridge National Laboratory (ORNL) in Oak Ridge, TN. I am pleased to be here today to discuss ORNL's gas separations research and membrane technology development and its collaborative work with a small business to incorporate this technology into a system that can efficiently and cost-effectively separate helium from other gas streams.

The Helium Supply Problem

Helium (He) is a scarce, high value, inert gas with unique properties that is used in several high technology applications such as MRI machines, super-conductors, semi-conductor fabrication, fiber optic manufacturing and others. For the last century, the U.S. has dominated global helium supply with 2010 production estimated at 125 million cubic meters. Virtually all helium produced in the U.S. today is from a few "rich" natural gas deposits that contain sufficient helium to enable economic recovery. However U.S. production of helium is in rapid decline as these currently viable rich reserves are being depleted (Figure 1). This coupled with rising global demand has resulted in a shortage causing prices to rise (Figure 2). As is shown in Figure 2, the price of helium increased four-fold from 1998 to 2013.

A Possible Technology Solution

Helios-NRG, a small business located in Western New York, estimated that a substantial amount of helium, exceeding that in the "rich" fields used today, is present in lower-grade fields where the amount of energy required to extract helium is cost-prohibitive with current technology. In order to solve this problem, Helios-NRG set out to develop an advanced technology to cost-effectively recover helium from these vast but "low grade" sources.

In 2010, Helios-NRG received a DOE Small Business Technology Transfer (STTR) award to fund their efforts. They believed that a hybrid system that integrated membrane and non-membrane technologies would permit high purity helium production from marginal, low purity sources—at costs comparable to the conventional technology used today to recover helium from helium-rich fields. Led by Dr. Ravi Prasad, the Helios team brings more than 30 years of technical and business experience in gas separations including helium recovery applications. They found essential support at ORNL with its expertise in membrane separations, forming a team uniquely qualified to develop options for addressing the shortage of helium.

ORNL's Historical Research on Membrane Technologies

ORNL's recognized leadership in gas separation and selective enrichment technologies goes back more than 60 years and is rooted in the Manhattan project. In the past 30 years, ORNL has focused on research and development utilizing advanced membrane technologies to address challenges in many energy-intensive separation processes of national and commercial importance. Utilizing ORNL's state-of-the-art membrane fabrication, characterization and test facilities, ORNL's research team has made important contributions in several areas such as hydrogen recovery and separations, and post-combustion carbon dioxide capture and sequestration technologies. The team is also developing and improving advanced processes for lithium and rare earth metal extraction and is a leading member of the Department of Energy's (DOE) Critical Materials Institute.

ORNL Role in the Helios-NRG STTR Project

The primary role of ORNL in the Helios-NRG project is to develop and perfect the advanced gas separation membranes that are used as part of the hybrid system. More specifically, ORNL will provide research and development support for the development, demonstration, and deployment of molecular sieve membranes in the hybrid system being developed by Helios-NRG. ORNL molecular sieve membrane technology has wide applications to other important gas separations including hydrogen, carbon dioxide and noble gas separations, which are relevant to the clean-energy, petrochemical, and high-tech industries. Molecular sieve membranes enable the separation of helium based on the fact that the helium molecule is significantly smaller than molecules of all the other gases such as nitrogen and methane often present in the marginal helium sources. ORNL also has membrane fabrication expertise and facilities for larger scale prototype development and can support field demonstrations with private industry sponsors and partners.

Goals, Objectives, and Funding of the Helios-NRG STTR Project

The Helios-NRG—ORNL collaboration started in September 2010 with the award of the Phase 1 DOE STTR grant and continued to support research focused on helium recovery with a Phase 2 DOE STTR award in August 2011. Phase 1 and 2 goals, objectives and funding are summarized as follows.

Phase 1

The objective of Phase 1 was to demonstrate the feasibility of the concept at bench scale. Preferred membrane materials and fabrication techniques were identified and significant progress made towards commercial targets. Economic analysis was carried out and showed potential to produce helium from marginal sources using the new hybrid system at substantial cost advantage over the current commercial helium prices.

Phase 1 of the project was successfully completed in early 2011 and achieved all its technical objectives. The total Phase 1 DOE-STTR grant to Helios-NRG was approximately \$100,000, out of which ORNL funding was approximately \$43,000.

Phase 2

Phase 2 of the project builds on the progress made in Phase 1 and is intended to advance the technology to pilot scale. This will include further improvement in the membrane properties, scale-up of membrane fabrication, design/fabrication/testing of a scaled-up hybrid system and validation of process economics. It will lay the foundation for advancing the technology to demonstration stage.

Phase 2 funding was awarded in August 2011 and this phase of the work will be completed by the end of 2013. The total DOE-STTR funding to Helios-NRG is approximately \$750,000 out of which ORNL funding was approximately \$300,000.

Research Progress and Results

The project has made excellent progress and is on track to achieve all of its objectives. As I conclude, here are other highlights:

- Early in the project, advanced hybrid process cycles for helium recovery incorporating membranes and other separation processes were developed and used to establish quantitative targets for membrane development.
- Many membrane materials and fabrication techniques were tested and preferred combinations identified. Excellent progress has been made towards meeting or exceeding the ambitious performance targets. Substantial progress has been made in evaluating different types of helium recovery opportunities including a “standalone” case, intended for green-field applications.
- Economic analysis was carried out using the actual properties measured in the pilot unit showing potential to produce 99.99+% helium from marginal sources using the new hybrid system, with substantial economic advantage over the current commercial helium price.
- Helios-NRG completed the design and fabrication of a small test unit in August 2012. Testing of a single molecular sieve membrane tube module was completed in the first quarter of 2013. ORNL and Helios are exploring other, different membrane technologies that may further improve overall system performance. This work is ongoing in the second quarter of 2013. Pilot tests confirmed significantly better performance than project targets for both types of membranes.
- ORNL completed the design and assembly of a larger test module containing 8 membrane tubes which was shipped to Helios-NRG in June 2013. This is currently under evaluation at Helios-NRG facilities in New York.

Prospects and Timeline for Possible Commercialization

Helios-NRG and ORNL are well-positioned to continue the development of the hybrid system and membrane technologies for helium recovery to ensure a stable, reliable, competitively-priced supply of helium for several high technology and research applications. To further enable commercialization, Phase 3 of this effort will focus on validation of the membrane technologies and the hybrid system in a field demonstration plant using actual raw gas bearing helium. Helios-NRG has had preliminary discussions with a global leader in helium production that has expressed interest in this system and hosting the field demonstration plant. The timeline for commercialization will depend on the availability of federal and private industry funding. It is estimated that based on the results to date, the field demonstration of the hybrid helium recovery system can be completed in 48 months, with the possibility for commercial deployment by 2020.

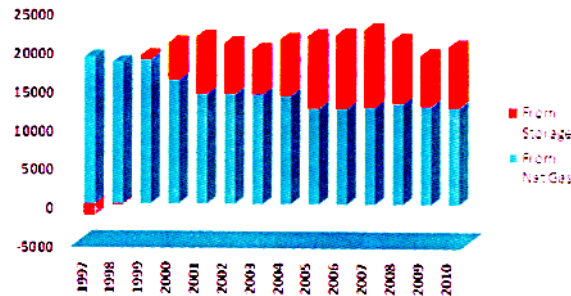


Figure 1. US Production from Natural Gas Wells and Government Storage (Courtesy Helios-NRG)

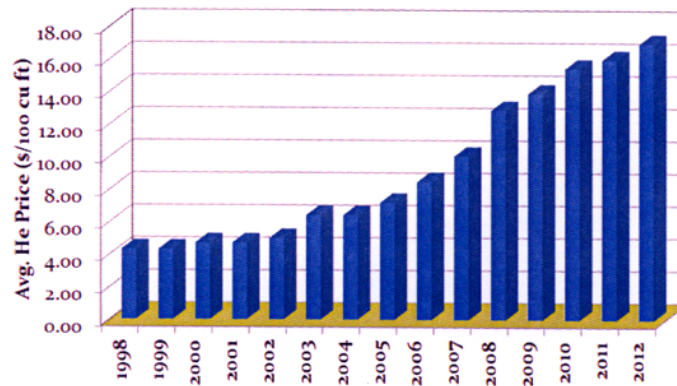


Figure 2. Average US Price for Grade A Helium (Courtesy Helios-NRG)

Mr. LAMBORN. Thank you, Mr. Bhave, and thank you for your statement. We will now begin the questioning. Members are going to be limited to 5 minutes, but we may have additional rounds of questions. I'll start by recognizing myself for 5 minutes.

Let's talk with Mr. Spisak. Do you think that the current laws for helium extraction on Federal lands are up to date and conducive for modern-day helium production operations?

Mr. SPISAK. Well, generally, the current laws and regulations are set up more for these large-scale, natural gas-based development where you have a significant resource available that could support the infrastructure needed to develop the helium. As smaller prospects are identified and as we're talking here from the panel some of the newer technologies that are able to develop lower-grade helium, the regs are not quite set up that way.

We generally, by maintaining ownership from Federal mineral estate, it's set up to be able to aggregate at the point where the helium is being processed and being extracted. And some of the difficulties we have had in the past, and one of the requirements that we require of these smaller projects, is to ensure that there is a

unification of the natural gas rights, and so we have the helium contracts.

So that is the kind of work-arounds we've developed to allow these smaller prospects to go. So I think we can make do with the current rules and regulations. Certainly any type of modernization would help facilitate that going forward.

Mr. LAMBORN. OK. Thank you.

Mr. Gutberlet, can you explain the difference in the processes and the cost between natural gas production and helium production in less than 3 minutes?

Mr. GUTBERLET. In standard oil and gas operations, in many cases you actually don't need any natural gas processing facilities to allow you to sell your products. However, in those helium-related projects, you're always going to have other components of the natural gas that need to be removed from the stream before you can have commercially available helium supplies.

CO₂, nitrogen, H₂S, methane and so forth, all of those can be very costly to separate from the helium stream, and as you go further and further downstream with the various components, pressures and temperatures get greater and greater or lower and lower in terms of temperature-wise, so it just becomes that much more complex and, of course, costly to remove those other components before you have a helium product that is available for the market.

Mr. LAMBORN. Can you give us an idea in terms of a percentage cost change to these different points you talked about vis-a-vis just natural gas processing?

Mr. GUTBERLET. Oh, depending on the components, H₂S and CO₂ are incredibly costly to remove. You could have upwards of 30 to 50 percent increase in your capital costs just depending on the amount of those individual products. Nitrogen rejection units are another very, very costly technology that you have to employ. So depending on the particular components of the gas, it's easily upwards of 50 percent.

Mr. LAMBORN. And how much of a variable cost difference is there? You talked about fixed capital costs, but how about variable cost?

Mr. GUTBERLET. Well, variable cost, the systems that are employed to remove H₂S and CO₂ have a significant variable cost component: electricity, power, and the solutions themselves that are employed to remove these products. So you can have a very significant variable cost component operating your expense component to these facilities, and that is why, as we have discussed here, historically you have gone after the high concentrations of helium. Now, I guess, we are chasing the lower concentrations just because of all these cost issues that you have referred to.

Mr. LAMBORN. OK.

Mr. Sears, in your testimony, you said that you nominated Federal acreage for a standard oil and gas lease in February of 2011, and you waited nearly 2 years for that acreage to be put up for auction. So I've got four questions in that line. The first one is: Were you given any reason why the wait was so long?

Mr. SEARS. Not given any reason whatsoever.

Mr. LAMBORN. And do you feel that anything could be done to expedite the process that land is made available for helium exploration and production?

Mr. SEARS. I would imagine it all boils down to field visits, field work, and that type of activity.

Mr. LAMBORN. OK, and I'm running out of time, so I'm going to come back to you in the second round of questions, and we'll come back to this one. So with that, I'm going to recognize Mr. Lowenthal for 5 minutes.

Dr. LOWENTHAL. Thank you, Chairman.

Mr. Spisak, are there currently any pending applications to produce helium from public lands where helium is the primary target, that is where it is not being captured as a byproduct of natural gas production?

Mr. SPISAK. We currently have two agreements. We've got three active agreements where there's natural gas production and they're producing. There are currently two other agreements where the waiver has been granted to allow them to produce helium only, and we have a couple more that are in negotiations right now, and there are all within the last 2 years that these have come up.

Dr. LOWENTHAL. And so there are no pending applications?

Mr. SPISAK. We have one pending right now we expect to have out this month.

Dr. LOWENTHAL. And were those projects conducted fairly quickly? Were they quickly processed?

Mr. SPISAK. The first one that came forward a couple years ago took a little bit of time because it was the first one, and we've tried to figure out what a waiver from a secretary meant. And once we got that worked out, the next couple have been fairly—

Dr. LOWENTHAL. So once you worked that out, you've been able to move the process through fairly smoothly?

Mr. SPISAK. And that's just the part for approving the waiver to allow a helium sales contract to be sold, but it's contingent on the applicant having the natural gas rights tied up or—

Dr. LOWENTHAL. So where you are now, is it correct to say that the BLM is not being overwhelmed with applications to produce helium from Federal lands?

Mr. SPISAK. We have other things overwhelming us, yes.

Dr. LOWENTHAL. So that is not one of the overwhelming things?

Mr. SPISAK. No.

Dr. LOWENTHAL. Is the Department's intention, as you mentioned, I just want to follow up on what you said before, to respond to the Chairman's question that the Department's intention is to examine the process for approving projects on public lands where helium is the primary target, that have already been permitted to develop lessons learned and come up with more robust policies if it's needed? So where are you in that process as your intention?

Mr. SPISAK. I think it's fair to say we're in the middle of that process. We have the couple projects that have come forward that we're working through and kind of coming up with a framework that would allow us to develop a more formal policy that will help guide future projects as they come forward.

Dr. LOWENTHAL. Thank you. And, Mr. Spisak, you mentioned in your view some of the regulations may need to be updated to allow

for the development of helium where it's the primary target. Does the Department have the authority under the Minerals Leasing Act to update these regulations administratively?

Mr. SPISAK. Where we have the trouble or where the problem area comes in is the oil and gas lease is maintained through natural gas production, and the primary term is 10 years, and if the helium recovery would go beyond that 10 years and there's not any significant natural gas production, how do you keep the lease going? And that's an area that we could use some work. Whether there's clear authority there to change regulations to allow that, I think that's something we need to investigate a little—

Dr. LOWENTHAL. So you may be able to do it administratively. So will you get back to this Committee in terms of whether that is possible?

Mr. SPISAK. Sure.

Dr. LOWENTHAL. Mr. Bhavé, you mentioned in your testimony that you anticipate that the membrane technology that you've been working on will be deployed commercially in the next 10 years. How might this technology affect the U.S. helium market?

Dr. BHAVÉ. Very substantially. In fact, the lot of economic analysis that we have done, the production cost of helium, FOB, using this technology will be substantially lower than the current market prices, so we believe that this will enable more usage of helium as we know that there is increasing demand for helium, so this would actually help solve some of that shortage.

Dr. LOWENTHAL. So you're about to deploy—and you really have developed this new technology, and yet the research and development cuts that we've recently seen in the Republicans' energy spending plan mean that projects like this will go unfunded in coming years. Is that a problem?

Dr. BHAVÉ. Yes. That could be a problem, and as I was saying that we are having conversations with DOE and others to see what sort of funding may be available. It doesn't appear there is a clear mechanism, but yes, I mean we are concerned about that, and certainly we are exploring possible options.

Dr. LOWENTHAL. Thank you, and I yield back my time, Mr. Chair.

Mr. LAMBORN. OK. Thank you.

Mr. Spisak, one area where we could see more development of helium is in the natural gas fields in the west where we have had historic drilling for natural gas, but limited development of helium. One example is in the San Juan Basin where much of the natural gas development has been in the Cretaceous layer, which has nearly no helium.

However, according to USGS, the deeper Triassic layer holds between 8 to 10 percent helium. My question is: What would be the process of a company to change the target zones to develop the deeper helium under current law, and does Congress need to change the authority to BLM to accommodate that?

Mr. SPISAK. Typically, when we lease a mineral state, it is done in a uniform manner, so whether there is a different zone, it wouldn't impact the ability to develop. Somewhere like the San Juan Basin, though, there are a lot of times where those different zones are broken up for various and sundry reasons.

But if there is a potential helium development zone, it would be something that the company would identify through gas sampling. And if the volumes are such that it would make it cost-effective to put in the equipment, the infrastructure to recover it, then at that point we would engage with the company and sign a helium sales contract.

We could do that now, and we have done that sort of thing, so there's really no change required. It's just a matter of working with the company and consolidating the area of interest under the helium contract and going forward.

Mr. LAMBORN. So BLM doesn't need any additional statutory authority?

Mr. SPISAK. Not in those types of circumstances, no.

Mr. LAMBORN. And I didn't know that you did leasing sometimes or permitting in layers or in zones.

Mr. SPISAK. Well, we don't typically do it that way. It may be that it's how the lands came back to the government or maybe somebody else would have subdivided different layers.

Mr. LAMBORN. OK. Thank you.

Mr. SPISAK. It's not our preferred state because it does complicate things.

Mr. LAMBORN. OK. Thank you.

Mr. Gutberlet, in your testimony, you discussed the NEPA requirements that lead to delays in helium projects. Do you have any thoughts on what Congress could do to provide regulatory certainty for helium producers and/or to improve the NEPA process?

Mr. GUTBERLET. As I understand it, under existing NEPA law, Congress has provided discretion to Federal agencies to prioritize certain types of projects, and given the strategic implications of helium as we've discussed here today, I think all we're suggesting is that helium-related projects can also fall under the same type of NEPA prioritization given to other projects and other industries.

Mr. LAMBORN. OK. Thank you.

Mr. Sears, do you feel the current process of obtaining a special waiver or consent from the Secretary to make helium the primary gas extracted from Federal land is the most efficient and up-to-date way to manage this resource? And if not, how could we improve upon that?

Mr. SEARS. Yes, I believe that helium should be separately granted to folks with projects where helium is a primary constituent. For instance, virtually all our projects have no appreciable amounts of hydrocarbons whatsoever. It is primarily nitrogen and helium. So in that case, a project like that would not fall under a standard oil and gas lease because there is no oil and gas, so we believe that helium, perhaps, could be fast-tracked in that regard.

Mr. LAMBORN. Mr. Gutberlet, do you have any thoughts on that same question?

Mr. GUTBERLET. Could you repeat the question, sir?

Mr. LAMBORN. Is the current process of obtaining a special waiver or consent from the Secretary to make helium the primary gas extracted from Federal land the most efficient and up-to-date way to manage that resource? And if not, can that be improved?

Mr. GUTBERLET. I'm afraid we don't have any experience in projects where helium is the primary revenue component, so I'm afraid I'm not an expert on—

Mr. LAMBORN. OK. Thank you.

And last, Mr. Bhavé, in your testimony, you mentioned that there are rich helium fields that are used today and lower-grade fields. Can you explain the difference between those two types?

Dr. BHAVÉ. Sure. When we say rich fields, we talk about helium concentrations 5 percent or greater. When we talk about the lean fields or low-grade, we're talking about extracting helium that is of the .1 to .3 percent. So there is a big difference. However, the quantities that you can extract from these low-grade are vast, so they actually exceed that of our existing rich reserves, and therefore, we were very excited to work on this new technology that has the potential to start extracting from low-grade to supplement our depleting supply of helium.

Mr. LAMBORN. OK. Thank you very much for that clarification. We will now have a second round—oh, excuse me. We have Representative Cartwright.

Mr. CARTWRIGHT. Thank you, Mr. Chairman.

Mr. LAMBORN. And then we'll do a second round.

Mr. CARTWRIGHT. Thank you, Mr. Chairman, Mr. Ranking Member, and thank you to all the witnesses for coming today. I appreciate your presence and your insights.

I want to direct my first question to Mr. Spisak. Mr. Spisak, I want to talk about geology for a little bit. Can you describe the geology in areas where helium may be recoverable as the primary target or the primary gas? Are these areas where natural gas production has already occurred? Are there areas where natural gas production has already occurred, but the helium resource has not been depleted?

Mr. SPISAK. Generally, there's helium in all natural gas. It might be in the parts per billion range, but the general rule of thumb in the past has been if there's about $\frac{3}{10}$ of a percent of helium contained in the source gas, then it's economically viable. With new technologies, that threshold may be pushed down, but if there's natural gas production, it's taken the helium up with it. It's produced at the same time, so there's no real way to separate it unless there's enough of a quantity in there to make it economically viable.

Mr. CARTWRIGHT. OK. Thank you for that.

And Mr. Bhavé, I was listening to your testimony, and one of the things you mentioned, and it's also in your written submission, is that there is an estimate that there's a substantial amount of helium present in lower-grade fields where the amount of energy required to extract helium is cost-prohibitive with current technology. You said that in today's testimony. You've also provided for us, Dr. Bhavé, a couple of tables with your submission. Figure 2 shows us the rise in helium prices on the market over the last 14 years, 15 years, and just looking at it, it's quite dramatic. Since 1998, it's gone from under \$4 per hundred cubic feet to over \$16 per hundred cubic feet. Am I reading that correctly?

Dr. BHAVÉ. Yes. That is correct.

Mr. CARTWRIGHT. Really it looks like much of the rise has occurred in the last 10 years. In fact, looking at your chart, it looks like in the last 10 years, helium has more than quadrupled in price; is that true?

Dr. BHAVE. Yes, that's true.

Mr. CARTWRIGHT. So I want to tie those two concepts together, the dramatic rise in helium price to the statement that the energy required to extract helium is cost-prohibitive with current technology in lower-grade fields. At some point, the price of helium justifies an added expense of that separation; does it not?

Dr. BHAVE. Yes, but I think when we say these rich reserves, they are still using helium at higher concentrations than these low-grade sources.

Mr. CARTWRIGHT. Right.

Dr. BHAVE. But that's the difference. So the existing technology of cryogenic distillation as well as absorption is able to handle those streams, but when you are looking at very low-grade streams that contain very little methane or other hydrocarbons and largely nitrogen, that's where the issues are in terms of using the existing technology to refine it to 99.99 percent pure helium.

Mr. CARTWRIGHT. Thank you for that, which makes development of new technology all the more important, and you've made that point. Dr. Bhave, would you have been able to develop your membrane technology without research and development support from the Department of Energy?

Dr. BHAVE. No, we would not have. We are very fortunate that the Department has chosen this project since 2010, and I think it was essential, because the private industry would not fund this research at this time.

Mr. CARTWRIGHT. Now Dr. Bhave, last night, the House Republicans passed an extremely damaging energy appropriations bill that would cut the Department of Energy's budget next year by \$3 billion below last year's already depressed levels and \$4 billion below the level requested by the President. Investments in applied R&D would be cut by more than half under this bill. Will massively cutting R&D investments like this undermine America's ability to innovate in technologies such as yours?

Dr. BHAVE. Yes. I believe so, and we are very concerned about it, and so we are looking at options to find sources for funding to continue this effort.

Mr. CARTWRIGHT. Well, thank you, Dr. Bhave, and I yield back.

Mr. LAMBORN. OK. Thank you. And to take advantage of the great expertise that we have assembled before us, let's do a second round of questions, but at the same time, we're about to call votes. So to make sure that we wrap up before we have to leave for votes and so you don't have to wait for us to come back and we're done with this hearing, we'll just have a 2-minute round. We'll go in the same order that we did earlier. So Representative Flores will go first.

Mr. FLORES. Well, thank you, Chairman Lamborn. I'd like to remind Mr. Cartwright that the Department of Energy spending levels that we set last time are the same as 2007, and the world wasn't coming to an end in 2007.

Mr. SEARS, I'd like to continue the line of questioning we had with you regarding the 2-year delay it took for you to get a lease. And my next question on that subject was: Would it be more beneficial for the helium industry if we made helium a leasable mineral similar to oil and gas?

Mr. SEARS. Absolutely.

Mr. FLORES. OK. Mr. Spisak, do you have any comments on that?

Mr. SPISAK. I think it really has to go hand in hand with the technology issue, because we tried to lease out helium prospectively back in the early 1990s, and the helium lessee, the person that won that wasn't able to get an agreement with the natural gas lessee, which they had to be able to work together to be able to produce together, and we wasted basically 10 years trying to work some accommodation, that we didn't really have a needle to kind of push them along, and so there are challenges with that approach.

Mr. FLORES. Continuing on this helium leasing and helium permit processing question for a minute, a couple of facts we know, that helium is essential to U.S. industry and, number two, we're going to close the reserve in the near future. So, in light of that, does BLM give any sort of priority processing for NEPA reviews or APD applications for helium exploration?

Mr. SPISAK. Nothing has been identified as far as priority processing. It's basically the oil and gas leasing process that is—

Mr. FLORES. Right. But one of the things that sort of bothers me is that we have a fast-track process for wind and solar, and it seems to me like we ought to have a similar process for helium since it's such a critical element. Would you agree with that?

Mr. SPISAK. That could be something that could be considered, but I can take that back.

Mr. FLORES. Thank you. I yield back.

Mr. LAMBORN. Thank you.

Mr. LOWENTHAL.

Dr. LOWENTHAL. Thank you, Mr. Chair.

Mr. Spisak, can you talk about the time frame for approving these projects where helium is the primary target. This is relatively new, I think, as you pointed out, that the industry is pursuing. My concerns are: Is the Department more efficient at learning what needs to be evaluated in processing these applications? Where are we?

Mr. SPISAK. The process that we've been talking mainly about is the helium waiver and then the contracts associated with that. I think it is now fairly streamlined, but that's just half of it. The other half is that a condition of the waiver is they work with the oil and gas lessee and work through that process. If they have that already worked out when they come to us, then it can move forward very quickly. If not, as the example here that Mr. Sears mentioned, it could derail the whole process.

Dr. LOWENTHAL. The permitting times will then continue to decrease as you point out, as the industry and the Department become more familiar with this process?

Mr. SPISAK. On the helium side, but the natural gas lessee side is within—

Dr. LOWENTHAL. Talking about the helium side.

Mr. SPISAK. Yes.

Dr. LOWENTHAL. I just want to say that I'm troubled that we're hearing, I think, from the Majority that imposing artificial timelines on the Department to approve these applications and eviscerating the NEPA process, as they've tried to do with the oil, gas, and mining industries, will continue. So I just want to say I'm very concerned that we'll see a process that is working now, as it goes forward, will protect other interests and that we will eviscerate that process.

Thank you, and I yield back my time.

Mr. LAMBORN. OK. Thank you. I will recognize myself for 2 minutes.

Mr. Spisak, earlier you said BLM wasn't overwhelmed by requests to extract helium. However, with the impending closure of the reserve, do you expect to see an increased interest in helium development both from natural gas and as a primary gas?

Mr. SPISAK. I think as it becomes clear that there is interest and the market starts driving that, it's very possible that we'll get more people coming to us to develop low-BTU helium.

Mr. LAMBORN. OK. So what you said earlier is only as of today and could change in the short term?

Mr. SPISAK. It's very possible. Sure.

Mr. LAMBORN. OK. Thank you. And also, Mr. Spisak, if I'm correct, the secretarial waivers are just a small part of the overall process. Can you tell us what NEPA-related documents are required and what is the timeline of the NEPA process?

Mr. SPISAK. The NEPA, and I'm not a NEPA expert by any stretch, but the NEPA process is not any different for the oil and gas or the helium side. It's a Federal action that our field offices have to go through and identify impacts and such, and since the helium development is very similar to an oil and gas development, all the same types of impacts are possible and would need to be analyzed.

Mr. LAMBORN. And what length of time does all that take?

Mr. SPISAK. They vary from months to years depending on whether you have to do an EA or an EIS.

Mr. LAMBORN. OK. So it easily could be in the years?

Mr. SPISAK. It would be dependent on how up-to-date the RMP is and other documents, or other analyses, that may have occurred in that area. If it's an area where there hasn't been any development before, it might be longer because new NEPA would have to be—

Mr. LAMBORN. If there's already been oil and gas development in the past, does that make it go faster?

Mr. SPISAK. I would expect they'd be able to tier off of that type of analysis for the helium impacts. I would not expect there to be a lot of helium impacts associated with development, but you're still drilling wells, you're still potentially putting in operational pipelines, those types of impacts. And depending where they are, the surface expressions and whether there is threatened and endangered species, all that sort of thing wouldn't be any different whether it's helium or oil and gas.

Mr. LAMBORN. Mr. Gutberlet or Mr. Sears, do you have a final comment on the NEPA process, especially if there is existing hydrocarbon activities?

Mr. GUTBERLET. We have varied experience in our operations in the Rockies. We have some projects that go in a reasonable time frame, which would be a few years for the NEPA experience. We've had other projects that are actually still ongoing that are now over 7 years waiting for the EIS and EA and NEPA process to work its way through in areas where we've been producing since the 1930s. So we've seen varied experience, and it's more than likely just factors of staffing, of prioritization, of the complexities of the projects and multiple things.

Mr. LAMBORN. Mr. Sears, then we'll wrap up.

Mr. SEARS. We don't have any NEPA experience just yet.

Mr. LAMBORN. OK.

Mr. SEARS. We've been focusing primarily on private lands primarily because of this.

Mr. LAMBORN. I'll just conclude, but thank you. I'll just say this process, if not a broken process, needs to be streamlined somehow, especially if we do have a closure in October and we're scrambling to discover and exploit new resources. And we're going to be in a world of hurt partly because of the litigation and the regulation that NEPA causes.

OK. Thank you all for being here. I want to ask unanimous consent to enter into the record a statement by Scott Sears, President and Founder of IACX Energy.

[No response.]

Hearing no objection, so ordered.

[The prepared statement of Mr. Scott Sears follows:]

**Statement submitted for the record by Scott Sears,
President and Founder, IACX Energy**

Mr. Chairman and Members of the Committee, IACX Energy ("IACX") sincerely appreciates the invitation to provide a written statement today for this important hearing before the Subcommittee on Energy and Mineral Resources—and we apologize that our schedules made our presence at the hearing impossible.

By way of background, IACX is a midstream natural gas and gas treating company headquartered in Dallas, Texas. IACX presently operates 20 gas treating facilities (18 nitrogen rejection and two helium extraction) in six states, and the company owns or controls natural gas pipelines in Kansas, Oklahoma and Texas. IACX holds eight patents involving the separation of gases. Our company is growing to meet demand for our unique technologies and assets, especially as it relates to the separation of nitrogen and/or helium from natural gas at or near the wellhead. It is the latter topic that has relevance for today's proceedings. IACX recently installed its second gaseous helium unit in Kansas and we are currently executing on numerous other projects across the Western and Mid-Continent regions of the U.S. There are many challenges before us as it relates to promoting new American supplies of helium, but we're encouraged by the progress of the industry, and we are heartened by this subcommittee's continued interest in this important issue.

The topic of finding, processing and selling refined helium from American sources is one in which IACX is particularly interested. We believe that there are changes that can be made to the existing federal mineral leasing regulations that will reform some of the 1920-era provisions that impede modern day helium extraction. IACX believes that reasonable updates to existing laws will encourage the discovery of new domestic helium sources and the investment in extraction and processing facilities. Many of the existing helium laws that stifle exploratory efforts today have been on the books since 1920, back when federally derived helium was reserved exclusively for the U.S. military's strategic dirigible (blimp) program. The times, military needs, uses for helium and market conditions have changed—but regulations for producing helium have not.

America has more helium than it realizes

There are still high-helium gas deposits here in the US, many on Federal lands. But the exploration, mining, discovery and production of helium gas, as its own dis-

tinct or accretive endeavor, has suffered from a multi-generational era of obliviousness with regard to the sourcing and uses of helium. In fact, before the admirable work that this committee has done to educate policymakers and the public, most Americans had no idea that helium was scarce and is irreplaceable for many high tech applications. Most independent natural gas producers don't even recognize the value of the helium that may be contained in their gas streams. Even if they did, the question of the helium's extraction and purification presents a considerable barrier of progress. IACX believes that the recognition of helium as a value constituent in natural gas will be accelerated if the final version of recently debated helium legislation resembles the House's H.R. 527, the "Responsible Helium Administration and Stewardship Act". Transparency in pricing of helium itself will create more supplies if there is a market-driven incentive for explorers to risk the necessary capital to find new supplies. And the sooner this transparency becomes reality, the sooner new volumes of domestic helium will find its way into the market.

Helium is still a mystery for most people, including prospective helium miners

In recent Congressional hearings on the topic, we heard that helium is important for so many different and important things—it's not just about balloons and blimps. There is a genuine concern among a variety of American industries and laboratories that helium shortages will persist as the rule and not the exception. Throughout these recent hearings, the 'demand' and 'distribution' segments of the helium industry were impressively and exhaustively examined. I think we can all agree that there exists today a potential scarcity of supply of helium but not a scarcity of demand or distribution. We are very pleased that this forward-thinking Subcommittee has chosen to shift the focus of discussion to this neglected topic of incentivizing new, domestic helium supplies.

Some of the challenges facing new, domestic helium sourcing endeavors

From a mining operation perspective, the digging, capture, production, gathering, and refining of domestic helium from Federal lands is complicated for various reasons:

1. The exploration and production of helium as a *primary* gas constituent on federal lands requires the explicit consent "of the Secretary [of the Interior]". At IACX's Harley Dome, Utah helium project, the process for receiving this consent alone took more than two years. These delays did not result from bureaucratic inertia, but rather because the novelty of helium-only production and sales from federal lands. This 'request for consent' exposed the fact that was no such precedent for helium driven extraction on federal lands. We are proud of the fact that IACX helped establish this precedent, but these processes still need review and change.
As helium values increase through time, we believe this issue will become especially problematic for producers. In cases where natural gas prices are low and helium prices high, it's conceivable that helium will be the constituent of primary value, and producers would then be, unexpectedly, burdened by this regulation.
2. Presuming that a "helium-only" mining project is successful, the law is vague with respect to perpetuating the rights of extraction. For example, because helium is explicitly excluded from the Mineral Leasing Act of 1920 (as amended), helium production alone cannot 'hold' an oil & gas lease but an oil & gas lease *is required* to explore and mine for helium reserves. There is presently nothing that connects the helium production with the federal oil & gas lease form (where helium is the primary constituent), yet there's a vague mandate on the Federal level that, somehow somehow, connects the two. This is simply broken.
3. Helium has always been considered a byproduct of natural gas, and then, not always a byproduct with value: helium reduces natural gas' BTU content. Industries typically don't spend primary capital dollars on by-product constituents, such as helium. This is one of the reasons why helium scarcity accelerates during times of depressed natural gas prices.

Proposed 'fixes' of existing helium laws

IACX believes that some very simple changes to the existing helium laws will go a long way in clearing the path for new helium supplies. For one, the Mineral Leasing Act of 1920 (as amended) needs to be updated. Here are two ideas:

1. Change the wording of the Mineral Leasing Act to include helium extraction as one of the value constituents, or
2. Remove the exclusion of helium from the Mineral Leasing Act.

In either case, a Helium Processing Agreement will still need to be consummated between the producer and the Amarillo Field Office of the BLM. IACX has already

done this for its Harley Dome project and is in the process of doing it in our Woodside Dome project. Helium is an atypical commodity and it requires special handling, measurement, and tailored royalty considerations that don't necessarily fit the traditional 'oil & gas' model. If either one of the above ideas were implemented, we believe the process for helium discovery will be greatly helped. Moreover, all divisions of the BLM would have a precise methodology for 21st Century helium exploration endeavors because the Mineral Leasing Act has been consecrated and amended through time.

Where will the new domestic sources of helium come from?

The principals of IACX have spent several years looking for high helium deposits. Presently, we're operating two gaseous helium units that are producing private (non-government) helium and taking it directly to the market. IACX is also involved in two *primary* helium projects on Federal lands: the Harley Dome Field and the Woodside Dome Field. The Woodside Dome Field was once set aside (by Executive Order) as "U.S. Helium Reserve #1" in 1924 and the Harley Dome Field was once set aside as "U.S. Helium Reserve #2" in 1934. These fields never produced helium (or anything else), perhaps because the helium was the primary value constituent—the balance of the gas in these two fields is largely inert gas containing virtually no hydrocarbons. IACX's low-pressure helium extraction technologies have also helped turn these idle helium fields into potentially significant new sources of supply.

We see considerable opportunities for helium extraction as a primary gas and as a by-product gas in states such as Montana, Wyoming, Colorado, Utah, New Mexico, Kansas, Arizona, Oklahoma, Texas, Arkansas, Michigan, Indiana, Illinois and Kentucky. In most cases, incidences of helium in natural gas are less than 0.5 percent; therefore, hydrocarbon gas and liquids need to lead the project's economics. In other areas, such as Harley Dome, helium percentages can reside in gas deposits exceeding 7%; however, in these 'high helium' anomalies, the host gas is usually inert nitrogen. At 7% helium, a project can begin to stand on its own as a helium-only project.

IACX as a primary helium developer and as a facilitator of helium value for others with helium

IACX Energy is proud of its role in bringing in new volumes of helium in the very recent past and in the very near future. We believe that the new "openness" proposed in the House's "Responsible Helium Administration and Stewardship Act" will shed light on this largely misunderstood element. With pending 'price transparency' already in the works, we believe that economic incentives will soon drive new helium exploration and extraction efforts. A simple review and updating of the existing, antiquated laws will only help future helium endeavors and supplies. IACX and its industry partners are forging a path into new areas of helium exploration and we're excited about the future and thankful to this Subcommittee.

We are also standing by to help the entire natural gas producing community by providing a service for the extraction, purification and marketing of gaseous helium. Many natural gas producers that we speak to are surprised to find that not only is there helium in their gas, but that it can also be economically captured and sold. When economic incentive augments supplies of a critical, strategic commodity such as helium, everyone along the supply chain wins. A retuning of regulations related to helium exploration and extraction will help ensure a stable supply of helium for the United States for many years to come.

Mr. LAMBORN. I thank the panel for their testimony. Members of the Committee may have additional questions for the record, and I ask that you would respond to these in writing. We're about to go over to vote, so we're going to wrap up now. If there's no further business, without objection, the Committee stands adjourned.

[Whereupon, at 10:49 a.m., the Subcommittee was adjourned.]

